National Wildlife Disease Program

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Program Activity Report (PAR)

Developing New Surveillance Methods

Healthy animals have unique "odor types" or patterns of volatile chemical signatures emanating from their external processes, e.g., skin, breath, urine, and feces. When a virus or bacteria enters an animal's system and infects the animal, processes to fight off the infectious agent are engaged. Metabolic changes accompany these physiological processes resulting in alterations of the odor.

NWDP disease biologists are collaborating with NWRC, Monell Chemical Senses Center, and Colorado State University to develop "biosensor" and instrumental techniques to detect odor changes of duck feces resulting from infection with a Low Pathogenic Avian Influenza virus. The first stage of this project is to train live mice biosensors to detect odors associated with infection. If mice prove to be effective, a canine model can similarly be developed for field deployment. The second stage of the project is to develop an instrumental technique to quantify odor changes and potentially lead toward mechanical sensors for disease surveillance. For more information please contact Dennis Kohler,

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Risk Factors for Influenza Re-Assortment

The NWDP staff office is collaborating with the University of Minnesota (UMN) Center of Excellence for Influenza Research and Surveillance, on a multi-year project to identify risk factors for novel avian-swine influenza re-assortment viruses. Wildlife Services and other agencies conducting avian influenza surveillance in Minnesota have provided wild bird swab samples to the UMN Veterinary Diagnostic Laboratory. Matrix positive avian influenza virus samples (AIV) are identified by screening with PCR. Then non-H5 and non-H7 positive wild bird samples are characterized and sequenced at UMN. Serum samples are also collected from pigs held at commercial swine operations located within 8 kilometers of sites where AIV positive bird samples were collected. Swine serum samples are tested for antibodies to avian H1 and H3 viruses. The presence of AIV antibodies in swine similar to the nearby wild bird AIV may indicate exchange of viruses between wild birds and commercial swine. Since swine can be co-infected with avian influenza as well as human influenza, acquisition of AIV from wild birds may increase the likelihood that novel re-assortments could arise. Results with the wild bird data are pending, but a similar analysis comparing commercial turkey farms with swine operations has found a positive correlation between proximity and the likelihood of exposure of turkeys and swine to the same Type A influenza virus. For more information please contact John Baroch,

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The original artwork on this page was created by the National Wildlife Disease Program's Erika Kampe and Sarah Goff